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EXAMINER

NGUYEN, LUONG TRUNG

ART UNIT PAPER NUMBER

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/085,955	Applicant(s) HORI ET AL.	
	Examiner LUONG T. NGUYEN	Art Unit 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9 and 28-32 is/are allowed.
- 6) ☒ Claim(s) 10-16 and 18-27 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/23/02</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claims 1-5, 21 are objected to because of the following informalities:

Claim 1 (line 6), claim 4 (line 6), "an optical image" should be changed to --said optical image--.

Claim 21 (line 1), "the process of storing" should be changed to --the step of storing--.

Claims 2-3 are objected as being dependent on claim 1.

Claim 5 is objected as being dependent on claim 4.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 10-16, 18-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sass et al. (US 5,404,162) in view of Bakhle (US 6,061,092).

Regarding claim 10, Sass et al. disclose method of capturing and recording video images comprising:

(a) capturing a sequence of video images wherein said sequence comprises at least first video images captured at a first exposure level and second video images captured at a second

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different exposure level (figure 1, column 2, lines 59-67);

(b) generating a series of video image signals comprising first video image signals representative of said first video images and second video image signals representative of said second video images (figure 1, column 2, lines 59-67);

(c) converting said first and second video image signals to first and second digital format data respectively (video images are converted to digital format by frame grabber 30 located in computer 32 (figure 1, column 4, lines 15-33);

(d) storing said first and second digital format data (storing digital data in memory 34, (figure 1, column 4, lines 15-33);

(e) retrieving said first and second digital format data (digital data stored in memory 34 is retrieved by processor 38, figure 1, column 4, lines 15-46);

(f) converting said first and second digital format data to first and second output video signals respectively (digital data is converted into analog signal for displaying onto monitor 40, figure 1, column 4, lines 33-47);

(g) utilizing said first and second output video signals to generate side-by-side displays of said first and second video images respectively (frames 46 and 47, figure 3, column 5, lines 24-66).

Sass et al. do not disclose said sequence comprises first video images captured at a first exposure level and second video images captured at a second different level, with said second video images being interspersed among said first video images in said sequence. However, Bakhle et al. disclose a video camera, which captures a sequence of video images which comprises first video images captured at a first exposure level (video frame 1, video frame

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M..., figure 6, column 6, lines 6-31) and second video images captured at a second different level (video frame 2, video frame M+2 ..., figure 6, column 6, lines 6-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Saas et al. by the teaching of Bakhle et al. in order to improve the quality of images captured by the digital camera.

Regarding claims 11, Sass et al. disclose wherein said first and second video image signals are analog video signals derived from an analog video camera (camera sensor 10, figure 1, column 2, lines 60-67).

Regarding claims 12, Sass et al. disclose wherein said first and second video image signals are digital video signals (video images are converted to digital format by frame grabber 30 located in computer 32 (figure 1, column 4, lines 15-33).

Regarding claim 13, Sass et al. disclose wherein said digital video signals are derived from a digital video camera (camera sensor 10, figure 1, column 2, lines 60-67).

Regarding claims 14, 21, Saas et al. and Bakhle et al. do not disclose the step of assigning date, time and frame codes to separately identify each of said relatively bright and relatively dark images. However, Bakhle et al. disclose a frame includes header data 52, which includes various control information relating to frame and its place in the video stream (figure 3, column 5, lines 8-15). It would have been obvious to include date, time and frame codes into the

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video frames in order to let the user can retrieve a desired frame for viewing.

Regarding claims 15, Sass et al. disclose wherein said first and second digital format data is stored temporarily in first and second buffers (buffer memory 34, figure 1, column 4, lines 15-47).

Regarding claims 16, 19, Saas et al. and Bakhle et al. do not wherein said first and second digital format data is stored in a non-volatile memory device. However, Sass et al. disclose storing the digital data in memory 34 (figure 1). It would have been obvious to use a non-volatile storage to store digital data in order to prevent data from being lost when power is shut off.

Regarding claims 18, Sass et al. disclose a method of capturing and recording video images comprising capturing in memory in the form of digital data a sequence of video images of a scene (figure 1, column 2, lines 59-67); converting said digital data to video signals (figure 1, digital data from processor 38 is converted to analog signal for displaying on monitor 40); using said video signals to generate a side by side display of said first video images and second video images (frames 46 and 47, figure 3, column 5, lines 24-66).

Sass et al. do not disclose said sequence comprises first relatively bright video images and second relatively dark video images, with said bright and dark video images occurring alternately in said sequence. However, Bakhle et al. disclose a video camera, which captures a sequence of video images which comprises different dark images (video frame 1, video frame M..., figure 6, column 6, lines 6-31) and bright images (video frame 2, video frame M+2 ...,

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figure 6, column 6, lines 6-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Saas et al. by the teaching of Bakhle et al. in order to improve the quality of images captured by the digital camera.

Regarding claim 20, Saas et al. disclose wherein said step of storing precedes step (b) and further including the step of retrieving said digital data from said non-volatile storage, after which said retrieved data is processed according to steps (b) and (c), figure 1.

Regarding claim 22, see Examiner's comments regarding claim 10.

Regarding claim 23, see Examiner's comments regarding claim 18.

Regarding claim 24, see Examiner's comments regarding claim 10.

Regarding claim 25, see Examiner's comments regarding claim 18.

Regarding claims 26-27, see Examiner's comments regarding claims 18-20.

Allowable Subject Matter

4. Claims 1-9, 28-32 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 1, 4, the prior art of the record fails to show or fairly suggest method of producing a video recording with improved dynamic range comprising operating said computer so that (1) digital video signals are stored in said application memory in the order that they were

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generated from said video image signals but segregated according to the exposure values of the fields or frames which they presents, (2) said digital video signals are transferred from said application memory to said display memory according to the exposure values of the fields or frames represented by said digital video signals and in the order that said digital format data signals are generated from said analog signals, (3) said digital video signals are transferred from said display memory to said video signal processing means and converted thereby to output analog video signals, and (4) said output analog video signals are applied to said display means so as to cause said display means to generate a visual side by side display of captured images with different exposure values.

Claims 2-3 are allowable for the reason given in claim 1.

Claim 5 is allowable for the reason given in claim 4.

Regarding claim 6, the prior art of the record fails to show or fairly suggest method of producing a video recording comprising applying said stream of analog image signals so that (2) said stored application software program causes said first and second digital field signals to be stored in said application memory in the order that they were generated from said analog image signals and according to the exposure values of said captured images, with each of said digital field signals stored in said application memory defining a video field of $2n$ lines of pixels, (3) said stored application software program transfers stored first and second digital field signals from said application memory to said display memory in the order that they were generated and according to the exposure values of said captured images; (4) said stored application software program causes said stored first and second digital field signals to be

transferred from said display memory to said video signal processing means, whereby said video signal processing means converts said first and second field or frame signals to first and second analog output video signals respectively, and (5) said stored application memory program causes said first and second analog output video signals to be applied to said display means so as to cause said display means to generate a simultaneous display of a first video reproduction of the captured optical image at a first exposure level and a second video reproduction at a second exposure level, with each video comprising $2n$ lines of pixels.

Regarding claim 7, the prior art of the record fails to show or fairly suggest a method of recording and displaying video images comprising operating said digital computer so that in sequence (b) said first and second digital data image signals are stored in first and second buffers in said application memory, (c) said first digital data image signals are transferred in sequence from said first application memory buffer to a first image buffer in said display memory, (d) said second digital data image signals are transferred in sequence from said second application memory buffer to a second image buffer in said display memory, with each of said second digital data image signals being transferred in step with said first digital data image signals, (e) said first and second digital image signals are transferred from said first and second image buffers to said video card and converted to corresponding first and second analog output video signals; (f) said first and second analog output video signals are applied to said display means to generate a display comprising first and second video images in side by side relation, with said first and second video images corresponding in exposure to said first optical images and said second video images corresponding in exposure to said second optical

images.

Claim 8 is allowable for the reason given in claim 7.

Regarding claim 9, the prior art of the record fails to show or fairly suggest a method of recording and displaying a scene captured as a series of first and second alternately occurring analog video signals comprising the steps (b) converting said first and second digital format video signals to first and second composite video signals each representative of a frame of n lines of pixels, with 1 of said n lines of pixels being derived from the remainder of said n lines of pixels and said first and second composite digital video signals being representative of said scene captured according to said first and second length exposure times respectively; (c) storing said first and second composite digital video signals in first and second buffers respectively.

Regarding claim 28, the prior art of the record fails to show or fairly suggest a computer system for processing, storing and displaying video image, said system comprising:

processing means including a central processor for (a) sequentially storing said first and second digital field or frame signals in said application memory with said stored digital field or frame signals being categorized according to their exposure values, (b) sequentially moving said stored first and second digital field or frame signals from said application memory and sequentially storing said first and second digital field or frame signals in said display memory with said stored digital field or frame signals being categorized in said display memory according to their exposure values, and (c) transferring from said display memory to said video

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card in sequence each of said first digital field or frame signals and the second digital field or frame signals generated next in time relative to said each first digital field or frame signal, whereby to convert said first and second digital field or frame signals into first and second output video signals respectively in a format suitable for driving a display means so as to generate a display constituting side by side images with two different exposure values.

Claims 29-32 are allowable for the reason given in claim 28.

5. Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 17, the prior art of the record fails to show or fairly suggest a method of capturing and recording video images comprising wherein said sequence of captured video images includes third video images captured at a third exposure level, with said third video images being interspersed among said first and second video images in said sequence, and further comprising the steps of generating third video image signals, converting said third video image signals to third digital data format, storing, retrieving and converting said third digital format data to third output video signals, and to generate a display of said third video images concurrently with and in side-by-side relation with said displays of said first and second video images.

Conclusion

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6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nakanishi et al. (US 5,488,389) discloses display device.

Takahashi et al. (US 5,831,676) discloses image pickup device using plural control parameters for exposure control.

Kanzaki et al. (US 6,546,156) discloses image processing device.

Serizawa et al. (US 6,593,970) discloses imaging apparatus with dynamic range expanded, a video camera including the same, and a method of generating a dynamic range expanded video signal.

Hatano (US 6,952,234) discloses image pickup apparatus and method for broadening apparent dynamic range of video signal.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T. NGUYEN whose telephone number is (571) 272-7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID L. OMETZ can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
3/17/06



LUONG T. NGUYEN
PATENT EXAMINER